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09/881,115	06/14/2001	Michael Lynn Hinds	15745-US	7919

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EXAMINER

PANG, ROGER L

ART UNIT	PAPER NUMBER
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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/881,115
Filing Date: June 14, 2001
Appellant(s): HINDS, MICHAEL LYNN

Jimmie R. Oaks
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on December 21, 2004.

(1) *Real Party in Interest*

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A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 3 and 11 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

2996162	Lehde	8-1961
4171818	Moskowitz et al.	10-1979

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(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lehde in view of Moskowitz '818. With regard to claim 1, applicant has disclosed a gearbox containing gearing and having a low section having a bottom wall, a rotatable drive shaft extending through said bottom wall, and being coupled to said gearing, and a seal located for preventing oil from leaking along an interface including a surface section of the shaft where it enters said bottom all of the gearbox as prior art (Jepson claim), but lacks the teaching of a contaminant collector. Lehde teaches a wall 31 with a rotatable drive shaft 37, and a seal 35, wherein a contaminant collector 60 having magnetic characteristics is mounted closely adjacent a top surface of said seal. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the gearbox of applicant's prior art admission to employ a contaminant collector in view of Lehde in order to collect metal particles that may be contained in the lubricant in order to prevent wear on other parts (Col. 1). Lehde lacks the teaching of said collector mounted for rotation with an associated one of said shaft sections at a location closely adjacent to the seal. Moskowitz teaches a contaminant collector 41 mounted to for rotation on a shaft 10 adjacent to a seal 32. It would have been obvious to one of ordinary skill at the time of

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the invention to modify Lehde to mount the collector for rotation on said shaft (thereby interchanging the spiral groove portion 63 and magnet 60) in view of Moskowitz, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. With regard to claim 9, Applicant has disclosed a sugar cane base cutter assembly including a gearbox provided with an upper, horizontal section extending between and joining a pair of depending wells, each well having a bottom wall, and upper drive shaft section of a base cutter leg being rotatably mounted in each bottom wall and a seal being located on each shaft section at an associated bottom wall for preventing leakage of oil from said gearbox along the shaft section as prior art (Jepson claim), but lacks the teaching of a contaminant collector. Lehde teaches a wall 31 with a rotatable drive shaft 37, and a seal 35, wherein a contaminant collector 60 having magnetic characteristics is mounted closely adjacent a top surface of said seal. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the gearbox of applicant's prior art admission to employ a contaminant collector in view of Lehde in order to collect metal particles that may be contained in the lubricant in order to prevent wear on other parts (Col. 1). Lehde lacks the teaching of said collector mounted for rotation with an associated one of said shaft sections at a location closely adjacent to the seal. Moskowitz teaches a contaminant collector 41 mounted to for rotation on a shaft 10 adjacent to a seal 32. It would have been obvious to one of ordinary skill at the time of the invention to modify Lehde to mount the collector for rotation on said shaft (thereby interchanging the spiral groove portion 63 and magnet 60) in view of Moskowitz, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. With regard to claims 3 and 11, Moskowitz teaches the gearbox, wherein the collector is a ring that is

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secured to the shaft, however lacks the specific teaching of press fitting. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lehde in view of Moskowitz to employ a press fitted ring, since it is known in the art that securing a ring on a shaft may be accomplished by press fitting.

(11) Response to Argument

1) Explanation of the Combination.

As stated in the previous responses, applicant discloses the rotating shaft in a gearbox housing with a seal between the shaft and housing as prior art. Lehde is used to bring in the teaching of a magnetic contaminant collector to protect said seal. This collector can be seen in Figure V, which is the structure of disc 36' and magnet 60, and can also be seen in Figure VIII, which is the structure of disc 71 and magnetic structure 65/64. If the magnets/magnetic structures 60/(65/64) were interchanged with the discs 36'/71, the function of the invention would not be altered, and the teaching of the collector with magnetic characteristics, rotating with said shaft, would be taught. Moskowitz is only used to reinforce the teaching that a magnet/magnetic structure can be fixed to a shaft.

2) Argument of Different Environments

Applicant argues that the environment of Lehde and Moskowitz are far different from each other and from that in which applicant's claimed contaminant collector is employed. With regard to applicant's claimed environment, applicant has disclosed the gearbox, shaft, and seal as prior art. Applicant is claiming the improvement of a contaminant collector mounted in said gearbox for rotation with said shaft and located at a location closely adjacent a top surface of said seal to intercept and collect ferric contaminants before they engage the seal. Lehde provides the foundation for the teaching of this improvement.

In the first paragraph of the first column, Lehde discloses the fact that "the invention relates to devices for excluding magnetic particles from seals and bearings," and although the invention is ideally suited for use in magnetic coupling mechanisms, the invention is also suited for "other mechanisms whose seals and bearings are exposed to the entry of magnetic particles." In lines 49-55, Lehde confirms that the object of the invention is to exclude said particles from the seals, which "will give a lifetime of service without maintenance or attention." Given that the applicant has only claimed a contaminant collector above the seal as the improvement, it can be shown that Lehde teaches this improvement. Applicant also argues that the environment of Moskowitz differs from both the present invention and Lehde.

The environment of Moskowitz is not relevant to the combination, as the only teaching employed from Moskowitz is of a magnet 41 that can be fixed to a rotation shaft 10, and said magnet is also located closely adjacent to a seal 34, as is the magnet taught by Lehde. The interchanging of parts in Lehde would inherently provide a magnet rotating with the shaft, however, Moskowitz is used as an additional teaching to further validate this.

3) Argument of the Details of the Inventions

Applicant argues that both cited references differ functionally from the present invention. With regard to Lehde, applicant uses Figure 1 to point out that the teaching of the contaminant collector is employed within a clutch/coupling and that the particles are not contaminants themselves, but a necessary part of the clutch/brake assembly. In Figure 1, Lehde does teach of a coupling, however, the coupling itself is not the teaching that is used within the rejection. The teaching of the contaminant collector itself is the teaching that is pertinent in this case. This teaching is illustrated in the embodiment of Figure V, which has been pointed out to the applicant in prior responses, wherein particles are collected and prevented from reaching seal 35. This teaching is further illustrated in the embodiment of Fig. VIII, wherein two shafts rotatably fixed to each other 40/40' have a seal 43, and a magnetic contaminant collector located closely adjacent a top surface of the seal. The materials of the housing, shafts, and other parts are not relevant to the rejection, nor have they been incorporated to the rejection. As stated earlier, applicant has already disclosed the gearbox/seal/shaft environment as prior art. With regard to applicant's argument that the magnetic particles are not contaminants, in the second paragraph of Col. 1, Lehde states that the particles often enter the seals and eventually damage them. Also in Col. 10, line 9, Lehde teaches that the "abrasive particles" are kept away from the seal. Abrasive particles that damage the seal are contaminants. In Figure VIII, the sole purpose of this embodiment is to keep the contaminants from the seal. The particles are not necessary to any clutch or brake assembly, as the rotating shaft 40/40' is analogous to the rotating shaft of the present invention. In fact, the particles are unwanted, and therefore ejected away from the seal.

With regard to Moskowitz, applicant points out the difference between the function of the ferrofluid collector protecting the seal and the function of the present invention. Again, the ferrofluid collector is not relevant to the rejection. The only teaching Moskowitz is being cited for is a magnet rotatably fixed to a shaft. This is to reinforce the teaching of the interchanged parts of Lehde, and the fact that the magnet taught by Moskowitz is located in the same claimed location of Lehde ("closely adjacent a top surface of a seal") further validates the combination.

4) Collection versus Conveying

Applicant argues that the Lehde teaches of "conveying" the contaminants as opposed to "collecting" the contaminants. It should be pointed out that only claim 1 of the present application uses the word "collect." With regard to Lehde, in Col. 9, lines 70-72, the contaminants are said to "collect on the apices of the ribs at points of crossing" and then the relative rotation of the ribs themselves cause ejection of the unwanted contaminants after they have collected onto the ribs. In both Figures V and VIII, the magnet produces a magnetic flux to initiate the collecting function. And again, the ferrofluid seal of Moskowitz is not relevant to the rejections, as the only teaching incorporated from Moskowitz is of the magnet rotatably fixed to the shaft.

5) Parts and Materials

Applicant argues that the materials in the environment of Lehde would make it difficult to interchange the parts. The embodiment of Figure V of Lehde can be used to dispute this. The ejection of the contaminants is caused by the relative rotation between disc 36' and magnet 60

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(see Col. 8). First, magnet 60 and disc 36' form a magnetic flux region that will collect the contaminants, and the relative rotation between the two parts, along with the ribs 63, will eject the contaminants. With the interchanging parts, magnet 60 would be fixed to the shaft 37, and the ribbed portion of disc 36' would be attached to the housing. There would still be relative rotation and a magnetic flux would still be present, thereby collecting and expelling the contaminants. This is further illustrated in the embodiment of Fig. VIII, wherein a ribbed portion is located on both the housing and the disc. Placing the magnet on the shaft instead of the housing will not change the relative rotation, or magnetic flux. The materials of Lehde could remain unchanged without affecting the function. However, as pointed out earlier, the materials of the environment of Lehde are not being used in this rejection. It is the teaching of the contaminant collector that is relevant to the rejection.

6) No Benefit from Modification

Applicant argues that swapping the portion of the disc with the magnet would provide no benefit. A benefit of the change is not necessary, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

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7) Press Fitting




Applicant argues that Lehde in view of Moskowitz do not teach of a ring press fit onto the shaft. In Col. 6, on line 29, Moskowitz teaches of the magnets 41 being secured onto the shaft 10. Also, in Col. 5, lines 39-42, Moskowitz teaches of a magnet that is "force-fitted" as its means of attachment (aka press-fitted). Press-fitting is a common means of attachment within the art, and is also taught within the Moskowitz reference itself.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Roger L Pang
Patent Examiner
Art Unit 3681


RLP
January 19, 2005

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